

moved into the Pacific, and was central near N. 37°, E. 154°, the s. s. "City of Tokio," in N. 32° 22', E. 145° 07', reporting barometer 29.88 (758.9), wind nw, force 7, cloudy. The following reports from the s. s. "Gaelic" indicate the presence of this depression in the Pacific ocean. On the 29th, in N. 44° 15', E. 167° 05', barometer 29.06 (738.1), wind wsw., force 5, clear; 30th, in N. 44° 32', E. 173° 04', barometer 28.96 (735.6), wind nw., force 5, raining; 31st, in N. 44° 47', E. 179° 59', barometer 28.87 (733.3), wind w., showery.

As a noteworthy feature in the atmospheric conditions over eastern Asia, may be mentioned the high pressures 30.20 (767.1) to 30.60 (777.2) that prevailed over the Chinese Empire from the interior to the coast, while areas of relatively low-pressure prevailed over Japan. Unusually low temperatures occurred in China; at Zi-Ka-Wei, near Shanghai, the minimum temperature of the month, 21.02 Fahr., (−6° 0 Cent.), occurred on the 28th.

### TEMPERATURE OF THE AIR.

The distribution of mean temperature, over the United States and Canada, for the month of November, 1882, is exhibited on chart ii., by the dotted isothermal lines. The table of comparative mean temperatures in the lower left-hand corner of the

chart, shows the average temperature for the month in the several districts, as determined from observations taken at the Signal Service stations during the month of November in previous years.

Along the Atlantic coast, from New England to Florida, the mean temperature of the month is below the normal. In Florida, the departure is 2°.2; in the south Atlantic states, 1°.9, and in New England and the middle Atlantic states, less than 1°. In the northern and middle plateau districts, and on the Pacific coast, the temperature is also below the normal, the most marked departures occurring in the northern plateau and middle Pacific coast region, where they are 4°.4 and 3°.3, respectively. Throughout the remainder of the country the mean temperature is above the normal, the greatest departures occurring in the upper lake region, extreme northwest, the upper Mississippi and Missouri valleys, where the range is from 3°.7 to 4°.6. From the lower lake region southward to the Rio Grande valley, the departures vary from 1°.4 in the lower lake region, to 2°.8 in the Rio Grande valley.

### DEVIATIONS FROM MEAN TEMPERATURE.

Under this heading, departures exhibited by the reports, from the regular Signal Service stations, are shown in the table of

Table of Comparative Minimum Temperatures for the Month of November.

State or Territory.	Minimum for November, 1882, Signal Service.		Lowest since Signal Service stations were opened—3 to 11 years.			Lowest from any other source.			
	Station.	Temp.	Station.	Temp.	Year.	Place.	Temp.	Year.	Length of Record.
Alabama	Montgomery	0	Montgomery	0	1881	Huntsville	0	13	9 years.
Arizona	Fort Apache	13	Prescott	−1	1881	Whipple Barracks	−1	1	9 "
Arkansas	Fort Smith	22	Little Rock	10	1880	Fort Smith	6	21	21 "
California	Red Bluff	29	Campo	16	1881	Fort Bidwell	9	11	11 "
Do						Summit	1	1	1 "
Colorado	Pike's Peak	−26	Pike's Peak	−36	1880	Fort Garland	−35	30	30 "
Do	West Las Animas	−1							
Connecticut	New Haven	16	New Haven	2	1875	New Haven	2	87	87 "
Dakota	Fort Buford	−3	Pembina	−40	1874	Fort Buford	−37	16	16 "
Delaware	Delaware Breakwater	29	Delaware Breakwater	23	1880	Delaware City	13	4	4 "
Dist. of Columbia	Washington	24	Washington	12	1880	Washington	12	49	49 "
Florida	Pensacola	30	Saint Marks	27	1877	Fort Barrancas	19	59	59 "
Georgia	Atlanta	29	Atlanta	20	1881	Atlanta	10	7	7 "
Idaho	Eagle Ro. K.	−14	Eagle Rock	−1	1881	Fort Hall	−12	4	4 "
Illinois	Champaign	15	Champaign	−3	1880	Augusta	−12	19	19 "
Indiana	Indianapolis	22	Indianapolis	−5	1880	Indianapolis	4	18	18 "
Indian Territory	Fort Supply	9	Fort Gibson	−10	1880	Fort Gibson	0	62	62 "
Iowa	Davenport	13	Dubuque	−9	1875	Independence	−17	18	18 "
Kansas	Dodge City	7	Dodge City	−7	1880	Fort Leavenworth	−14	51	51 "
Kentucky	Louisville	29	Louisville	8	1880	Newport Barracks	−23	30	30 "
Louisiana	Shreveport	29	Shreveport	18	1880	Fort Jessup	17	23	23 "
Maine	Eastport	20	Eastport	−13	1875	Orono	−16	13	13 "
Do						Brunswick	−3	63	63 "
Maryland	Baltimore	26	Baltimore	15	1880	Emmitsburg	7	12	12 "
Massachusetts	Springfield	16	Boston	−2	1875	Florida	−14	4	4 "
Michigan	Fort Huron	10	Marquette and Escanaba	−9	'78-'80	Fort Brady	−17	59	59 "
Minnesota	Moorhead	−7	Duluth	−29	1875	Fort Ripley	−30	17	17 "
Mississippi	Starkville	29	Vicksburg	23	'77 & '80	Columbus	22	10	10 "
Missouri	Springfield	20	Saint Louis	8	1880	North Springfield	−9	1	1 "
Do						Allentown	−5	4	4 "
Do						Jefferson Barracks	−2	36	36 "
Montana	Terry's Landing	−15	Fort Benton	−31	1875	Camp Baker	−42	9	9 "
Nebraska	North Platte	6	North Platte	−10	1877	Camp Sheridan	−17	6	6 "
Nevada	Pioche	6	Winnemucca	−9	1880	Camp Halleck	−12	11	11 "
New Hampshire	Mount Washington	−7	Mount Washington	−40	1877	Grafton	−16	2	2 "
Do						Dartmouth College	−9	18	18 "
New Jersey	Atlantic City	21	Atlantic City	10	1875	North Germantown	6	2	2 "
Do						Newark	8	38	38 "
New Mexico	Santa Fé	6	Santa Fé	−11	1880	Fort Union	−15	31	31 "
New York	Buffalo	17	Albany	−10	1875	Canton	−20	2	2 "
Do	Rochester	17				Gouverneur	−17	40	40 "
North Carolina	Charlotte	28	Charlotte	18	1880	Fort Johnston	9	54	54 "
Ohio	Sandusky	19	Columbus	−5	1880	Westville	−13	9	9 "
Do						College Hill	−2	68	68 "
Oregon	Umatilla	15	Umatilla	9	1880	Camp Harney	4	12	12 "
Do						Fort Dalles	4	16	16 "
Pennsylvania	Williamsport	14	Pittsburg	4	1880	Franklin	−8	8	8 "
Do						Philadelphia	12	113	113 "
Do						Alleghany Arsenal	4	31	31 "
Rhode Island	Point Judith	15	Newport	4	1875	Fort Adams	3	42	42 "
Do	Narragansett Pier	15							
South Carolina	Charleston	36	Charleston	26	1881	Aiken	23	28	28 "
Do						Charleston	28	106	106 "
Tennessee	Knoxville	27	Knoxville	15	'80 & '81	Clarksville	−3	8	8 "
Texas	Fort Elliott	14	Fort Elliott	−5	1880	Fort Elliott	−8	3	3 "
Do						Fort Richardson	8	10	10 "
Utah	Salt Lake City	7	Salt Lake City	3	1880	Coalville	−18	9	9 "
Vermont	Burlington	17	Burlington	−10	1875	Newport	−18	9	9 "
Virginia	Lynchburg	27	Lynchburg	13	1880	Snowville	9	8	8 "
Do						Fort Monroe	15	58	58 "
Washington	Olfax	10	Spokane Falls	3	1881	Fort Colville	−8	20	20 "
West Virginia	Morgantown	25	Morgantown	8	1880	Helvetia	0	4	4 "
Wisconsin	La Crosse	18	Milwaukee	−14	1875	Nellisville	−26	8	8 "
Do						Fort Crawford	−13	25	25 "
Wyoming	Fort Washakie	−23	Cheyenne	−20	1875	Fort Bridge	−40	24	24 "



Texas, Fort Sill, Indian Territory, Omaha, Nebraska, and Huron, Dakota, 60°; Fredericksburg, Texas, 61°; Henrietta, Texas, 62°; Coleman City and Uvalde, Texas, Fort Benton, Montana, and Salt Lake City, Utah, 63°; Fort Apache, Arizona, Graham, Texas, and Fort Smith, Arkansas, 64°; Fort Meade, Dakota, 65°; Forts Elliott and Stockton, Texas, and Deer Lodge, Montana, 67°; Phoenix, Arizona, 68°; Fort Keogh, Montana, Rapid City, Dakota, and Denver, Colorado, 69°; West Las Animas, Colorado, 70°; Dodge City, Kansas, 71°; Fort Custer, Montana, 72°; Eagle Rock, Idaho, 75°; Fort Washakie, Wyoming, 80°; Cheyenne, Wyoming, 81°.

The greatest daily ranges have varied in the different districts, as follows:

*New England*: From 18° at Provincetown, Massachusetts, on the 11th to 33° on the summit of Mount Washington, New Hampshire, on the 30th.

*Middle Atlantic states*: From 20° Chincoteague, Virginia, on the 15th, to 30° at Washington, District of Columbia, on the 13th.

*South Atlantic states*: From 20° at Hatteras, North Carolina, on the 26th, to 29° at Augusta, Georgia, on the 3d.

*Florida peninsula*: From 14° at Key West, on the 20th, to 24° at Cedar Keys on the 17th, and 39° at Sanford on the 29th.

*East Gulf states*: From 20° at New Orleans, Louisiana, on the 16th, to 28° at Vicksburg, Mississippi on the 13th, and 28° at Montgomery, Alabama, on the 23d.

*West Gulf states*: From 20° at Port Eads, Louisiana, on the 16th, to 33° at Fredericksburg, Texas, on the 30th, and 41° at Fort Smith, Arkansas, on the 14th.

*Rio Grande valley*: From 32° at Brownsville, Texas, on the 13th, to 33° at Eagle Pass, Texas, on the 21st and 22d.

*Ohio valley and Tennessee*: From 20° at Louisville, Kentucky, on the 16th, to 30° at Indianapolis, Indiana, on the 12th, and 31° at Knoxville, Tennessee, on the 8th.

*Lower lake region*: From 18° at Sandusky, Ohio, on the 12th, to 26° at Detroit, Michigan, on the 12th.

*Upper lake region*: From 17° at Duluth, Minnesota, on the 24th, to 32° at Chicago, Illinois, on the 12th.

*Extreme northwest*: From 28° at Saint Vincent, Minnesota, on the 13th, to 36° at Bismarck and Fort Stevenson, Dakota, on the 30th.

*Northern slope*: From 20° at Helena, Montana, on the 13th, to 44° at Cheyenne, Wyoming, on the 2d and 44° at North Platte, Nebraska, on the 13th.

*Middle slope*: From 27° on the summit of Pike's Peak, Colorado, on the 11th, to 51° at West Las Animas, Colorado, on the 15th.

*Southern slope*: From 30° at Jacksborough, Texas, on the 14th and 15th, to 42° at Fort Sill, Indian Territory, on the 14th.

*Southern plateau*: From 29° at Fort Grant, Arizona, on the 14th, and 36° at Santa Fé, New Mexico, on the 14th, to 50° at Fort Apache, Arizona, on the 6th.

*Middle plateau*: From 27° at Salt Lake City, Utah, on the 3d, to 37° at Fort Washakie, Wyoming, on the 12th.

*Northern plateau*: From 22° at Spokane Falls, Washington Territory, on the 9th and 12th, and 22° at Lewiston, Idaho, on the 28th, to 46° at Fort Missoula, Montana, on the 6th.

*North Pacific coast region*: From 23° at Portland, Oregon, on the 4th, to 26° at Olympia, Washington Territory, and Roseburg, Oregon, on the 12th.

*Middle Pacific coast region*: From 14° at San Francisco, California, on the 15th, to 28° at Red Bluff, California, on the 14th.

*South Pacific coast region*: From 28° at San Diego, California, on the 14th, to 37° at Los Angeles, California, on the 14th.

#### FROSTS.

In the various districts they were reported on the following dates:

*New England*: 2d to 6th, 8th to 30th.

*Middle Atlantic states*: 3d to 9th, 12th, 14th, 15th, 16th, 18th to 30th.

*South Atlantic states*: 5th to 9th, 13th to 17th, 19th to 30th.

*East Gulf states*: 6th, 14th, 15th, 16th, 21st, 22d, 23d, 29th, 30th.

*West Gulf states*: 5th, 12th to 14th, 18th to 25th, 28th, 29th, 30th.

*Rio Grande valley*: 20th, 21st, 22d, 28th, 29th, 30th.

*Tennessee*: 5th, 7th, 8th, 13th to 16th, 18th to 25th, 27th to 30th.

*Ohio valley*: 3d to 9th, 11th to 16th, 18th to 25th, 27th to 30th.

*Lower lake region*: 1st to 8th, 13th, 14th, 15th, 17th to 21st, 24th, 27th, 30th.

*Upper lake region*: 1st to 5th, 8th, 9th, 10th, 12th to 30th.

*Extreme northwest*: 1st to 4th, 6th to 30th.

*Upper Mississippi valley*: 1st to 4th, 7th, 8th, 9th, 12th to 30th.

*Missouri valley*: 2d, 3d, 4th, 6th to 24th, 26th to 30th.

*Northern slope*: 1st to 30th.

*Middle slope*: 1st, 2d, 4th to 10th, 12th to 15th, 17th to 30th.

*Southern slope*: 6th, 12th to 15th, 20th, 21st, 27th to 30th.

*Southern plateau*: 1st to 6th, 10th to 24th, 26th to 30th.

*Middle plateau*: 2d, 5th to 8th, 10th to 30th.

*Northern plateau*: 1st to 20th, 23d to 29th.

*North Pacific coast region*: 4th, 7th to 12th, 15th to 18th, 23d, 24th, 25th, 27th, 28th, 29th.

*Middle Pacific coast region*: 1st, 4th to 7th, 10th to 15th, 17th to 25th, 28th.

*South Pacific coast region*: 2d, 19th, 22d.

#### ICE.

The subject of the formation of ice in the northern sections, is considered elsewhere in the REVIEW, under the heading ICE IN RIVERS AND HARBORS. The following are exceptional cases of ice formation in the southern sections of the country.

*Alabama*: Auburn, 14th, 29th, 30th; Mobile, 30th.

*Arizona*: Wickenburg, 13th.

*Arkansas*: Fort Smith, 13th, 29th, 30th.

*California*: Princeton, 11th.

*Florida*: Pensacola, 30th.

*Georgia*: Atlanta, 22d; Savannah, 30th.

*Louisiana*: Shreveport, 13th.

*Mississippi*: Fayette, 29th; Vicksburg, 14th.

*North Carolina*: Charlotte, 30th; Fort Macon, 30th; Kittyhawk, 15th, 25th, 26th; Smithville, 22d.

*Oregon*: Portland, 10th, 11th.

*South Carolina*: Stateburg, 23d.

*Tennessee*: Ashwood, 7th, 13th, 14th; Austin, 13th, 14th, 21st, 22d, 23d; Knoxville, 14th; Memphis, 3d, 4th, 28th, 29th; Nashville, 14th.

*Texas*: Coleman City, 13th, 29th, 30th; Denison, 29th, 30th; Fort Concho, 13th, 14th, 30th; Fort Davis, 17th to 20th; Indianola, 30th; Palestine, 30th.

*Virginia*: Johnstown, 15th, 18th to 22d, 26th; Norfolk, 26th; Variety Mills, 26th.

#### PRECIPITATION.

(Expressed in inches and hundredths.)

The distribution of rainfall over the United States and Canada, as determined from observations taken at more than six hundred stations, is exhibited on chart iii. The table in the lower left-hand corner of this chart shows the average monthly rainfall, determined from the records of Signal Service stations, in the several districts, it shows also the excess or deficiency of precipitation as compared with the average of many years.

In California, and over the southern part of the country from Arizona to the Mississippi river, in Florida, and in the extreme northwest, the rainfall has been greater than the November average. In northern California, the excess amounts to 2.13; the southern slope, 1.34; and in other districts named, it varies from 0.05 in southern California, to 0.87 in the Rio Grande valley. Throughout the rest of the country, there has been a deficiency in the monthly rainfall. The largest deficiencies occurred as follows: 2.98 in New England; 2.38 in the north Pacific coast region; 2.41 in the middle Atlantic states; and 1.90 in the east Gulf states. In all other districts, embraced in the area of de-